

CLAIMS

1. A porous crystalline material with a chemical composition



wherein

(n + m) is at least 5,

X is a trivalent element,

Z is Ge,

Y is at least one tetravalent element other than Ge, and

the ratio of m/(n+m) is between 0.0 and 0.5

said material having, in its calcined form, an X-ray diffraction pattern whose most characteristic diffraction peaks appear at values substantially coincident with

d(± 0.3 Å)	Relative Intensity
13.64	vs
7.87	vs
4.82	w
4.55	m
4.11	m
3.41	m

wherein d are interplanar spaces d in Ångstrom and the relative intensity of the lines is calculated as a percentage with respect to the most intense peak, with

vs being a very strong relative intensity of 80-100,

m being a medium relative intensity of 40-60, and

w being a weak relative intensity of 20-40.

2. A porous crystalline material in accordance with claim 1, which in its uncalcined synthesised form has an X-ray diffraction pattern whose most characteristic diffraction peaks are substantially coincident with

d(± 0.3 Å)	Relative Intensity
13.77	vs
7.96	m
4.88	m
4.60	s
4.16	m
3.45	s

wherein d are interplanar spaces d in Ångstrom and the relative intensity of the lines is calculated as a percentage with respect to the most intense peak, with
vs being a very strong relative intensity of 80-100,
s being a strong relative intensity of 60-80, and
m being a medium relative intensity of 40-60.

3. A crystalline material in accordance with claim 1, characterised in that in its calcined state it also displays diffraction peaks substantially coincident with

d(± 0.3 Å)	Relative Intensity
9.64	vw
6.82	vw
3.78	vw
3.31	vw

3.13	vw
3.05	vw
2.91	vw
2.67	vw
2.62	vw
2.53	vw
2.41	vw

wherein

vw is a very weak relative intensity of 0-20.

4. A crystalline material in accordance with claim 2, characterised in that in its uncalcined state it also displays diffraction peaks substantially coincident with

d(± 0.3 Å)	Relative Intensity
9.76	w
6.90	vw
5.63	vw
3.98	vw
3.82	vw
3.34	w
3.25	vw
3.16	vw
3.08	w
2.65	w
2.56	w
2.44	w
2.40	vw
2.33	vw

wherein

w is a weak relative intensity of 20-40, and

vw is a very weak relative intensity of 0-20.

5. A crystalline material in accordance with claim 1, wherein

X is at least one trivalent element selected from the group of Al, B, In, Ga, Fe; and

Y is at least one tetravalent element selected from among Si, Sn, Ti, V.

6. A crystalline material in accordance with claim 1, wherein X is selected from among B, Al and combinations of them, and

Y is Si.

7. A process for synthesising the crystalline material in accordance with claim 1, comprising:

a first stage of causing a synthesis mixture comprising a source of the trivalent element X, H₂O, an oxide or other source of the tetravalent material Y, an oxide or other source of the tetravalent material Z, an organic structure director agent (R), and a source of fluoride ions, and which has a composition, in terms of molar ratios of oxides, of:

$$\begin{aligned}(\text{YO}_2 + \text{ZO}_2) / \text{X}_2\text{O}_3 &\geq 5 \\ \text{H}_2\text{O} / (\text{YO}_2 + \text{ZO}_2) &= 1 \text{ to } 50 \\ \text{R} / (\text{YO}_2 + \text{ZO}_2) &= 0.1 \text{ to } 3.0 \\ \text{F} / (\text{YO}_2 + \text{ZO}_2) &= 0.1 \text{ to } 3.0 \\ \text{ZO}_2 / (\text{YO}_2 + \text{ZO}_2) &= 0.0 \text{ to } 0.5\end{aligned}$$

to react,

a second stage of maintaining the synthesis mixture under reaction conditions including temperature between 80 and 200 °C, until crystals of said crystalline material are formed,

a third stage of recovering said crystalline material.

8. A process in accordance with claim 7, comprising

a fourth stage wherein organic matter and fluoride ions occluded in the interior of the crystalline material are eliminated by means of a treatment selected from among extraction treatments, thermal treatment at temperatures above 250 °C for a period of time between 2 minutes and 25 hours and combinations of them.

9. A process in accordance with claim 7, wherein the synthesis mixture has a composition, in terms of molar ratios, of

$$\begin{array}{ll} (\text{YO}_2 + \text{ZO}_2) / \text{X}_2\text{O}_3 & \geq 7 \\ \text{H}_2\text{O} / (\text{YO}_2 + \text{ZO}_2) & = 2 \text{ to } 20 \\ \text{R} / (\text{YO}_2 + \text{ZO}_2) & = 0.1 \text{ to } 1.0 \\ \text{F} / (\text{YO}_2 + \text{ZO}_2) & = 0.1 \text{ to } 1.0 \\ \text{ZO}_2 / (\text{YO}_2 + \text{ZO}_2) & 0.0 - 0.17. \end{array}$$

10. A process in accordance with claim 7, wherein the structure director agent is an N(16)-methylsparteinium salt.

11. A process in accordance with claim 7, wherein the structure director agent is N(16)-methylsparteinium hydroxide.

12. A method for converting a feed formed from at least one organic compound comprising placing the feed in contact with a catalytically active quantity of a crystalline material as claimed in claim 1.

13. A method for converting a feed formed from at least one organic compound comprising placing the feed in contact with a catalytically active quantity of a crystalline material obtained in accordance with the process claimed in claim 7.